VDM Metals
A company of ACERINOX

VDM® Alloy HT 80

Designations and standards

Standard	Material designation
Werkstoffnummer	2.4869
DIN Kurzzeichen	NiCr 80 20
DIN	17470 (heating element) 17471 (resistance alloy) 17742, 17753 (wire)
UNS	N06023
ASTM	B 344
SAE AMS	5682

Chemical composition (weight-%) acc. to ASTM B 344

	Fe	Cr	Ni	C	Mn	Si	Cu	Mo	Al	Others
Min.		19	Bal.			0,75				
Max.	1	21		0,15	1,0	1,75	-	-	-	0,01

Mechanical properties at room temperature acc. to DIN 17470 and 17471

	N/mm²	ksi
Tensile strength (Rm)	≥ 650	≥ 94,3

Wire diameter		Elongation $A_{L=100}$ (in %)
mm	inches	
0.063 – 0.125	0.025 – 0.049	≈ 14
> 0.125 – 0.5	> 0.049 – 0.197	≈ 18
> 0.5 – 1.0	> 0.197 – 0.394	≥ 18
> 1.0	> 0.394	≥ 25

Creep properties (N/mm²)

Temperature in °C	°F	$R_{p\ 1,0}/10^3h$
600	1,112	80
700	1,292	40
800	1,472	15
900	1,652	9
1,000	1,832	4
1,200	2,192	0,5

Physical properties at room temperature

Density	(g/cm³)	8,3
Thermal conductivity	(W/m • K)	14,6
Modulus of elasticity	(kN/mm²)	200

Temperature in °C	°F	Electrical resistivity (μΩcm)		Coefficient of thermal expansi-on (10^{-6}/K)	Specific heat (J/kg • K)
		DIN 17470	ASTM B 344		
20	68	112	108	-	420
200	392	113	110	14,0	-
400	752	115	114	15,0	-
500	932	116	116	15,4	-
600	1,112	115	115	15,5	-
800	1,192	114	114	16	-
1.000	1,832	115	115	17	500
1.200	2,192	117	117	-	-

Processing

Melting point	(°C)	1,400
Max. operating temperature in air	(°C)	1,200 (as heating element) 600 (as resistance alloy)
Formability		good
Weldability		satisfactory
Filler metal		matching

Material characteristics

- Hight-temperature strength
- Good resistance to oxide scaling and to thermal fatigue up to 1,200 °C (2,192 °F)
- Very stable electrical properties

Typical applications

- Precision resistors
- Multipliers and load resistors
- Potentiometers

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Legal notice

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